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# (54) Machine tool table incorporating a work holder

(57) A magnetic or other chuck 7 for carrying work 11 thereon is provided in an embedded manner in the surface of a table 6 mounted on a machine tool for back and forth movement relative to a grinding wheel 4. The weight of the moving assembly including the table can thus be reduced, and the spacing between the surface of the table and the grinding wheel can be used effectively.

FIG. 1

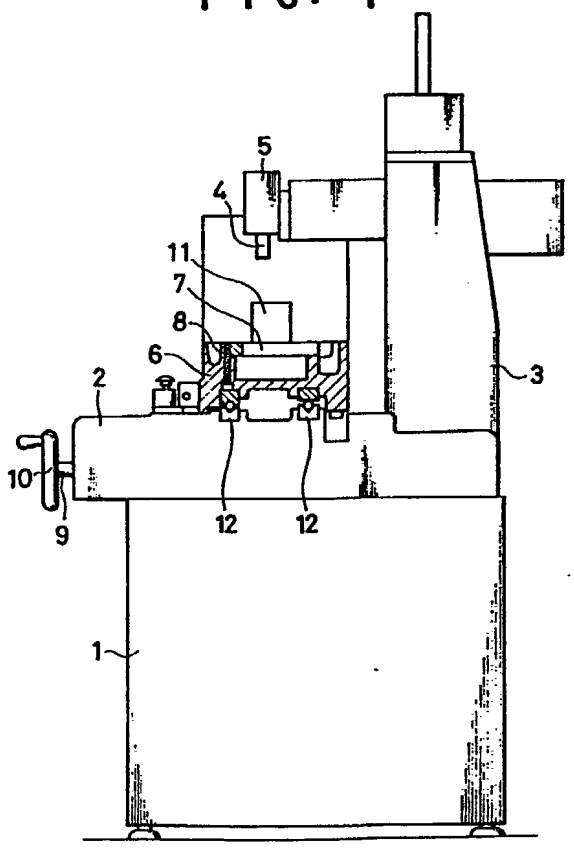


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FIG. 1

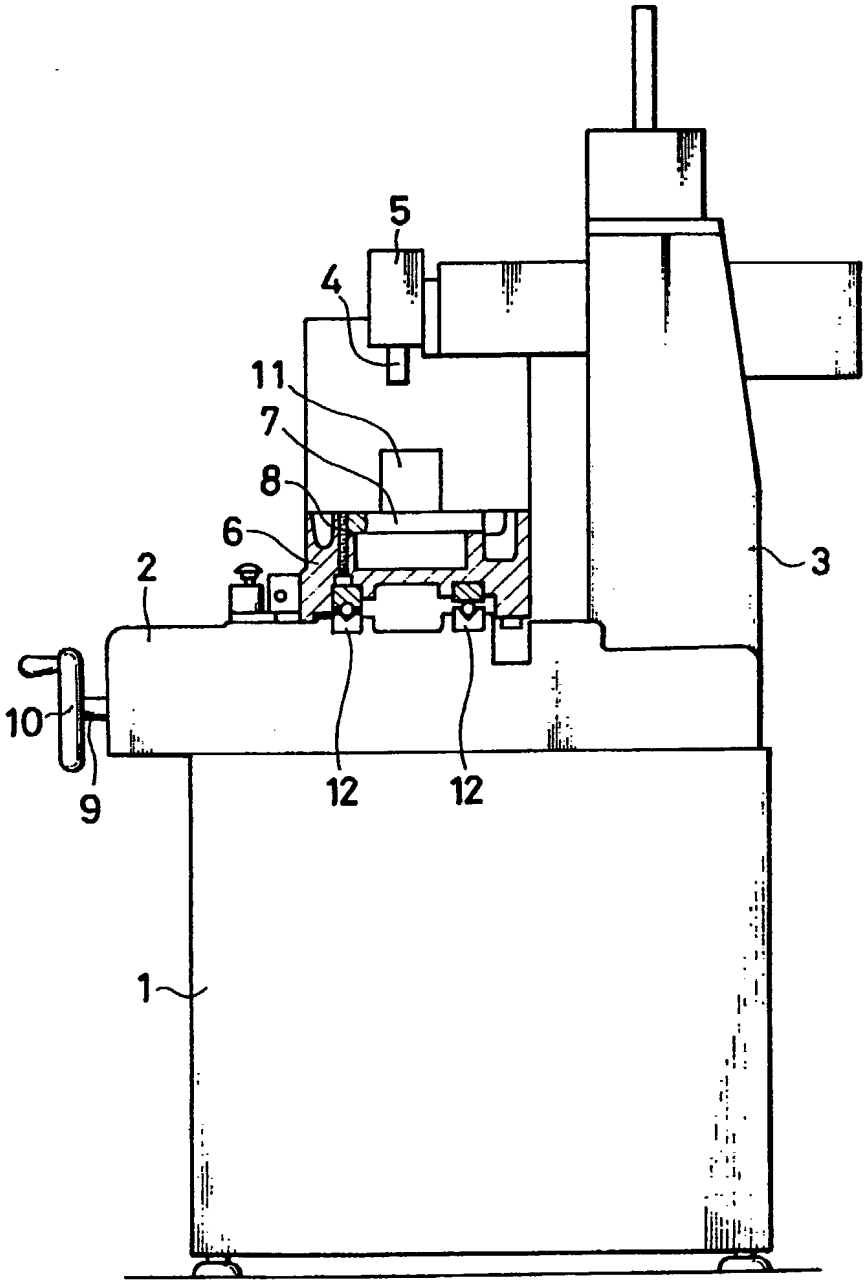
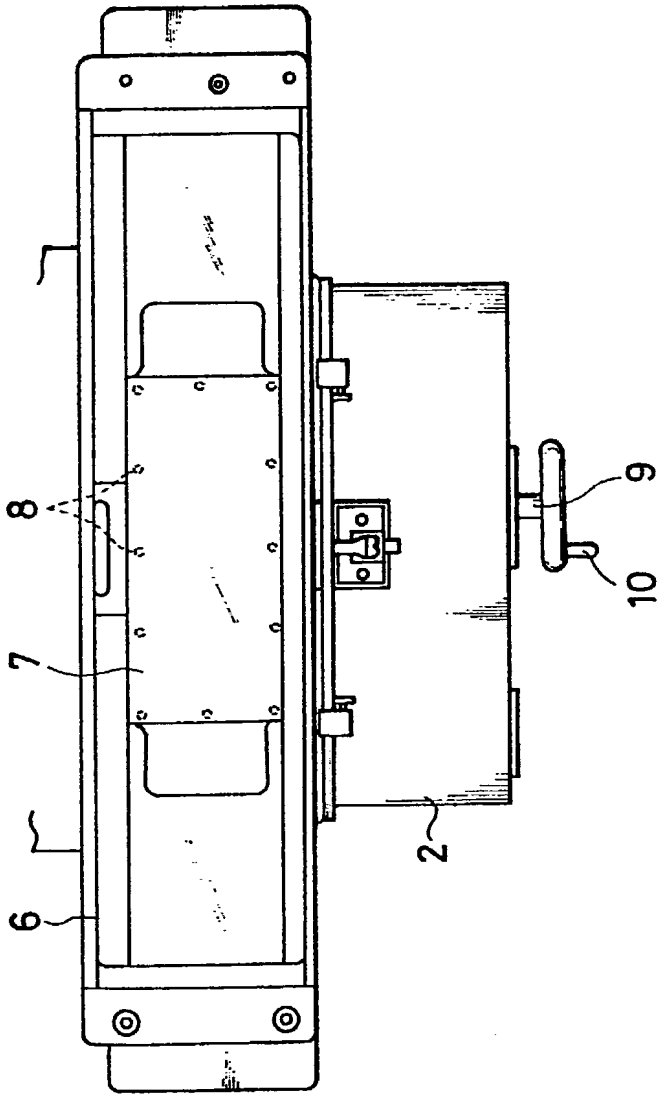


FIG. 2



# TABLE FOR MACHINE TOOL

This invention relates to a table for a machine tool such as a grinding machine.

Generally, a table of a grinding machine or a like machine tool is flattened at an upper face thereof, and such machine tool includes a chuck for mounting a workpiece thereon. A chuck such as, for example, an electromagnetic chuck, a permanent magnet chuck, a vacuum chuck or a mechanical chuck is mounted on a flattened upper face of a table, and the workpiece is secured to the flattened upper face of the table by means of the chuck. When grinding operation is effected, the table is moved back and forth.

Such a conventional system as described above has the problem that the combination weights of the chuck and the table is great and the inertia of the table is therefore high. Accordingly, there is a high shock load when the direction of movement of the table is

reversed which has an influence on accuracy in working and sliding portions of the parts are readily abraded. Further, the distance between the table and a tool is decreased by a dimension corresponding to a size of the chuck, and the size of a workpiece which can be worked is limited. Further, since the shock when the direction of movement of the table is reversed is great, the number of reversals of the table per unit time must be decreased, which leads to a problem that the operating efficiency is deteriorated.

It is a first object of the present invention to provide a table which has a workpiece holding function but is light in weight.

It is a second object of the present invention to provide a table wherein the distance between a workpiece mounting face and a tool is increased.

It is a third object of the present invention to provide a table by which accuracy in working a workpiece is improved.

It is a fourth object of the present invention to provide a table by which the efficiency in operation can be improved.

According to the present invention there is provided a table for a machine tool, characterized in that a chuck for carrying a workpiece thereon is embedded in a wall of said table and mounted for a back and forth movement relative to the tool.

Accordingly, the weight of a movable section including the table upon actual working on the machine tool can be reduced by a weight corresponding to the weight of the chuck, and consequently, the inertia upon movement of the table can be reduced. Further it is possible to reduce the shock upon reversing of the table to improve the accuracy in working and moderate abrasion of guide portions on which the table is carried for sliding movement. Furthermore, the distance between the table and the tool can be increased, and consequently, the limitation in size of a workpiece which can be worked can be moderated. Besides, the number of times of reversal of the table per unit time can be increased and the working efficiency can be improved.

Brief description of the Drawings

Fig. 1 is a side elevational view, partly in section, showing an embodiment of the present invention; and

Fig. 2 is a partial plan view of a table for a machine tool shown in Fig. 1.

An embodiment of the present invention will be described below with reference to the drawings. A machine tool shown includes a frame 1, a saddle 2 carried for movement in forward and backward directions on the frame 1, and a column 3 provided uprightly at a rear portion of the frame 1. A grinding stone head 5 is carried for up and down movement on the column 3 and has thereon a grinding stone 4 serving as a tool and a motor (not shown) for driving the grinding stone 4. A table 6 is mounted for sliding movement in leftward and rightward directions on an upper face of the saddle 2. A chuck 7 is provided in an embedded manner in an upper wall of the table 6. In particular, the chuck 7 is flush with the upper face of the table 6 and is secured to the table 6 by means of a plurality of screws 8. The chuck 7 may be of any type such as an electromagnetic

chuck, a permanent magnetic chuck, a vacuum chuck or a mechanical chuck. It is to be noted that a feed screw 9 is held in threaded engagement with part of the frame 1 and held for rotation in the saddle 2 such that it may be held from movement in an axial direction thereof, and a handle 10 is secured to an end of the feed screw 9.

With such a construction as described above, in order to perform grinding of a workpiece 11, at first the workpiece 11 is secured to the chuck 7, and then the handle 10 is turned to adjust the position of the saddle 2 in the forward and backward directions, whereafter a depth of cut of the grinding stone 4 is set. After then, the grinding stone 4 is rotated while the table 6 is moved back and forth in the leftward and rightward directions. In this instance, since the chuck 7 is provided in an embedded manner in the table 6, the weight of a movable section including the table 6 upon actual working on the machine tool can be reduced by a weight corresponding to the weight of the chuck 7, and consequently, the inertia upon movement of the table 6 can be reduced. Accordingly, it is possible to reduce the shock upon reversing of the table 6, improve the accuracy in working and

moderate abrasion of guide portions 12 on which the table 6 is carried for sliding movement. Further, the distance between the table 6 and the grinding stone 4 can be increased, and consequently, the limitation in size of a workpiece 11 to be worked can be moderated. Besides, the number of times of reversal of the table 6 per unit time can be increased and the working efficiency an be improved.

Since, according to the present invention, a chuck for carrying a workpiece thereon is provided in an embedded manner in that wall of a table mounted for back and forth movement which opposes to a tool as described hereinabove, the weight of a movable section including the table upon actual working on the machine tool can be reduced by a weight corresponding to the weight of the chuck, and consequently, the inertia upon movement of the table can be reduced. Further, it is possible to reduce the shock upon reversing of the table to improve the accuracy in working and moderate abrasion of guide portions on which the table is carried for sliding movement. Furthermore, the distance between the table and the tool can be increased, and consequently, the limitation in size of a workpiece which can be worked can be moderated.

Besides, the number of times of reversal of the table per unit time can be increased and the working efficiency can be improved.

## CLAIMS

1. A table for a machine tool, characterized in that a chuck for carrying a workpiece thereon is embedded in a wall of said table and mounted for a back and forth movement relative to the tool.

2. A table for a machine tool according to claim 1, characterized in that said chuck has an upper face positioned flush with an upper face of said table.

3. A table for a machine tool according to claim 1, characterized in that said chuck is secured to said table from below by means of a plurality of screws.

4. A table for a machine tool substantially as herein described with reference to the accompanying drawings.

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